IT IS THE VENDOR'S RESPONSIBILITY TO CHECK FOR ADDENDUM PRIOR TO SUBMITTING PROPOSALS

REQUEST FOR PROPOSALS
SPECIFICATION NO. 05-045

The City of Lincoln, Nebraska intends to enter into a contract and invites you to submit a sealed proposal for:

FRANK SHOEMAKER MARSH WETLAND RESTORATION

Sealed proposals will be received by the City of Lincoln, Nebraska on or before **12:00 noon Wednesday, March 9, 2005** in the office of the Purchasing Agent, Suite 200, K Street Complex, Southwest Wing, 440 South 8th Street, Lincoln, Nebraska 68508. Proposals will be publicly opened at the K Street Complex, reading only the names of the firms submitting proposals.

Proposers should take caution if U.S. mail or mail delivery services are used for the submission of proposals. Mailing should be made in sufficient time for proposals to arrive in the Purchasing Division, prior to the time and date specified above. Late proposals will not be considered. **Fax or e-mail proposals are not acceptable. Fee response must be in a separate sealed envelope.**

FRANK SHOEMAKER MARSH WETLAND RESTORATION
Request for Proposal

1. INTRODUCTION

1.1 The City of Lincoln-Parks & Recreation Department (City) is issuing this Request for Proposal (RFP) for the purpose of selecting one qualified consultant to perform all necessary services for a wetland restoration final design project at Frank Shoemaker Marsh, Lancaster County, Nebraska.

1.2 The project will include (but may not be limited to) the following general elements:

- 1.2.1 Project Coordination, Management and Facilitation
- 1.2.2 Initiating/Managing a Geotechnical Investigation and Monitoring Well Plan
- 1.2.3 Preparation of Final Design and Contract Documents
- 1.2.4 Permit Application Assistance
- 1.2.5 Construction Related Services – This general element **will not** include post-bid construction management services.
  - 1.2.5.1 The City will evaluate the post-bid construction management service needs at the appropriate time and will consider those services under a separate contract.

1.3 Consultants proposing on this project are to utilize the information contained in this Request of Proposal to prepare a written response and develop a technical approach for the Frank Shoemaker Marsh project.

1.4 Consultants are encouraged to visit the project site.

2. PROJECT BACKGROUND INFORMATION

2.1 Frank Shoemaker Marsh (Shoemaker) is located in Lancaster County approximately 1.3 miles north of the intersection of Arbor Road and North 27th Street.

2.2 The site is 160 acres bounded by North 27th Street on the east and private property on the south, west and north.

2.3 The project is located on Little Salt Creek, a tributary of Salt Creek.

2.4 Shoemaker is located in Section 24, Range 6 East, Township 11 North.

2.5 See attached location map.

2.6 Shoemaker is a diverse 160-acre ecosystem in north Lincoln containing saline wetlands, woodland, and grassland areas.

2.7 The Saline Wetlands Conservation Partnership (Partnership) was formed in 2003 as a result of a 2002 grant received by the City from the Nebraska Environmental Trust (NET).

2.8 The grant provided funding over three years for the acquisition of property to preserve and protect the eastern saline wetlands.

2.9 Shoemaker was purchased with NET grant funds and 2001 State Wildlife Funds from the Nebraska Game and Parks Commission.

2.10 Full partners of the Saline Wetlands Conservation Partnership include the City of Lincoln, Lancaster County, the Lower Platte South Natural Resources District, The Nature Conservancy and the Nebraska Game and Parks Commission.

2.11 Other partners include private landowners, USDA-Natural Resources Conservation Service, Ducks Unlimited, the Wachiska Audubon Society, the Nebraska Sierra Club, the Home Builders Association of Lincoln, Pheasants Forever, the Conservation Alliance of the Great Plains and the Nebraska Wildlife Federation.

2.12 With nearly 50 acres of eastern saline wetlands; the marsh provides a habitat for a variety of wetland plants and wildlife.

- 2.12.1 Saline plants found on this site include the state endangered saltwort plant.
- 2.12.2 This existing site is primitive and no designated trails or interior roads exist.
- 2.12.3 A field road is available for walking down to the eastern bank of Little Salt Creek from the parking area.

3. ADDITIONAL INFORMATION

3.1 In 2004 the Partnership completed the Frank Shoemaker Marsh Wetland Restoration Project Conceptual Design Memorandum (December 2004).
3.2 The memorandum presents a proposed conceptual design plan for wetland and upland habitat restoration concepts.
3.3 All electronic data and conceptual information collected to date, including the December 2004 memorandum, will be provided to the selected consultant at the time of award.

4. PROJECT GOALS

4.1 The primary goals of this restoration project are to enhance and restore degraded wetland systems, prevent further stream degradation within the project boundaries while maintaining known habitats (specifically those of the Salt Creek Tiger Beetle), and complement the restored wetland systems with native upland plant species.
4.2 In order to meet these goals the Partnership has established the following design objective; provide a comprehensive set of design documents for the Shoemaker project.

5. OBJECTIVES

5.1 Based on the December 2004 memorandum, the design will generally include the following restoration measures:
5.2 Wetland Cell Development.
- 5.2.1 The existing topography and site layout at Shoemaker lends itself to the development of three wetland cells.
- 5.2.2 These cells are supported and somewhat separated by the primary channel of Little Salt Creek.

5.3 Low-Head Earth Embankments.
- 5.3.1 The existing earth berms on the west side of the channel maintain a quality footprint for the establishment of a new berm system within each specific cell.
- 5.3.2 A system of low-head berms or embankments will mimic the natural stream levee system that has been eroded by head-cuts.
- 5.3.3 This type of berm construction will also be utilized on the east side of the channel.

5.4 Excavation/Sediment Removal.
- 5.4.1 Excavation of sediment within the new wetland cells will reestablish micro-topography and undulating bottom elevations within each cell.

5.5 Water Level Control Structure(s).
- 5.5.1 This will include the installation of water level control structure(s) within the wetland system to manage surface water and give flexibility to management techniques.

5.6 Vegetation Management.
- 5.6.1 As part of the wetland cell development, undesirable vegetation (including selected trees) will be removed during berm construction and excavation/sediment removal.

5.7 Grade Control Structure(s).
- 5.7.1 The existing rock rubble crossing will require rehabilitation and addition of supplemental armoring to maintain a properly functioning grade control and/or crossing.
- 5.7.2 Additional grade control structures are considered at the upstream and downstream limits of the property boundary to maintain control of the gradient onsite.

5.8 Stream Bank Reshaping.
- 5.8.1 Bank reshaping and restoration is considered at selected areas as part of the in-stream improvement measures.
- 5.8.2 Any reshaping activities should also minimize impacts to existing Salt Creek tiger beetle habitat (along the stream banks).

5.9 Pedestrian/Small Vehicle Bridge.
- 5.9.1 A pedestrian bridge will be located upstream of the existing crossing location.
- 5.9.2 A primitive trail and/or access path will be incorporated as part of this measure.

5.10 General Site Vegetation Management.

5.10.1 Undesirable vegetation (including selected trees) will be removed during the construction process in the upland areas as well as the wetland areas.

6. PROPOSED SCOPE OF WORK

6.1 The City is seeking the services of a consultant with extensive knowledge and experience in holistic wetland restoration design.

6.2 The final product for the Shoemaker project will be a complete set of design plans and specifications and contract documents, and a post-construction inspection certification.

6.3 The City is addressing this project as a three-phased process:

- 6.3.1 Geotechnical Investigation/Monitoring Well Program Phase;
- 6.3.2 Final Design Development Phase
- 6.3.3 Construction-Related Services Phase.

6.4 The Consultant is expected to complete the following major tasks:

- 6.4.1 Project Initiation
  - 6.4.1.1 Kick-off meeting
  - 6.4.1.2 Obtain all available existing information regarding the preliminary concepts for Shoemaker Marsh.
  - 6.4.1.3 Obtain any necessary additional field data.
- 6.4.2 Geotechnical Investigation/Monitoring Well Plan Development
  - 6.4.2.1 Perform geotechnical investigation and temporary monitoring wells at the locations indicated on the associated map.
  - 6.4.2.2 Provide laboratory analysis including, but not necessarily limited to, crumb dispersion tests, pinhole dispersion tests, grain-size analyses, Atterberg limits, sodium absorption test, pH, conductivity, Proctor moisture-density relations, and chemical tests for total exchange capacity, Na+, and Ca++.
  - 6.4.2.3 Provide analysis report.
  - 6.4.2.4 Survey all sampling locations and monitoring wells.
- 6.4.3 Design
  - 6.4.3.1 Perform all final design calculations and data analysis to achieve design parameters.
  - 6.4.3.2 Provide engineering design documents meeting City specifications to enable construction of wetland restoration measures using the conceptual plan and December 2004 memorandum as a baseline.
  - 6.4.3.3 Provide a cost estimate of probable construction costs and total project costs at 65% and 95% completion stages.
  - 6.4.3.4 Arrange coordination meetings with the City at 65% and 95% completion stages.
    - 6.4.3.4.1 Submit five (5) sets of plans approximately 5-10 days prior to each coordination meeting.
    - 6.4.3.4.2 Provide meeting agendas and follow-up meeting minutes for each coordination meeting.
  - 6.4.3.5 Prepare and provide technical specifications to enable construction of wetland restoration measures.
    - 6.4.3.5.1 Submit technical specifications at the 95% completion stage.
  - 6.4.3.6 Elements on the final plans shall include, but are not limited to, plan views, cross sections, profiles, material types and quantities, access and staging areas, limits of construction, removals, etc.
  - 6.4.3.7 Final sealed drawings will be submitted on Mylar as directed by City personnel. All final documents will also be provided electronically.
- 6.4.4 Public Participation
  - 6.4.4.1 Assist the City with the scheduling, coordination and presentation of a minimum of one public information meeting.
  - 6.4.4.2 Produce a City approved mailer/flyer for the public information meeting.

6.4.4.3 Prepare meeting agenda(s), record of meeting participants, and follow-up meeting minutes.

6.4.5 Bidding and Construction Related Services

6.4.5.1 Provide necessary bid documents and contracts.

6.4.5.2 Submit documents to the City for Advertisement development and distribution of bid documents.

6.4.5.3 Prepare and organize a pre-bid conference.

6.4.5.4 Respond to questions during the bid period.

6.4.5.5 Prepare any required addenda.

6.4.5.6 Attend Bid-Opening.

7. GENERAL PROPOSAL CONTENTS/REQUIREMENTS

7.1 The Consultant's proposal shall include the following general elements.

7.2 Cover Letter.

7.2.1 The Cover Letter must be written on the Consultant's official business letterhead, and must be signed by a principal of the firm.

7.2.2 The Cover Letter should also state that the proposal as submitted shall remain in full force and effect for a specified period of time, which must be at least 60 days from the proposal due date.

7.3 Executive Summary.

7.3.1 The Executive Summary shall condense and highlight the contents of the proposal in such a way as to provide the Evaluation Committee with a broad understanding of the Consultant's technical proposal.

7.3.2 Consultants must present their understanding of the project by stating the objectives and intended results of the project, and the Scope of Work.

7.3.3 Consultants shall summarize how their technical proposal meets the requirements of the RFP, and why they are best qualified to perform the work required herein.

7.4. Management Approach.

7.4.1 The Management Approach section should provide a summary of the submitting firm's history, background, and primary business sectors.

7.4.2 This section shall document how the Consultant will organize and manage the project.

7.4.3 The management approach section should also indicate the Consultant's project team composition, organization, and responsibility.

7.4.4 This will include documentation of the Consultant's previous project experience (including references) similar to the Shoemaker project in size, scope and complexity.

7.4.5 The management approach section shall identify the Consultant's project team including any subcontractors.

7.5 Technical Approach.

7.5.1 The Technical Approach section must include the Consultant's understanding of the Scope of Work identified in Section 4 of this RFP.

7.5.2 This section will indicate how the Consultant will address the project goals and objectives and will identify what steps the Consultant plans to take to perform the necessary tasks for project completion.

7.5.3 The Technical Approach shall provide clear indication of the Consultant's phased approach to the project.

7.6 Project Schedule.

7.6.1 The Consultant shall indicate a project schedule based on their understanding of the project and the information provided in Section 10 of this RFP.

7.6.2 The schedule shall include major milestones and elapsed calendar days.

7.7 Proposal length.

7.7.1 The length of the proposal shall not exceed 10 single sided pages (including the cover letter/executive summary).

7.8 Consultants may provide resumes and example projects as appendices to their proposal not counting toward the page total.

7.9 Responses to this RFP which fulfill all mandatory requirements will be evaluated on the content of the proposal.

7.9.1 Areas that will be addressed during the technical evaluation include:

7.9.1.1 Executive Summary

7.9.1.2 Management Approach

7.9.1.3 Technical Approach

8. PROPOSAL SUBMISSION REQUIREMENTS

8.1 To facilitate the proposal evaluation process, five (5) copies of the entire proposal must be submitted no later than **12:00 noon on Wednesday, March 9, 2005**.

8.2 Proposals must reference the Shoemaker project and be sent to the specified address.

8.3 The City accepts no responsibility for mislabeled/mis-sent mail.

8.4 Late arriving proposals will not be accepted and will be returned to the sender unopened.

8.5 Mail proposals and direct questions to:

Mr. Vince M. Mejer
Purchasing Agent
City of Lincoln Purchasing
440 S. 8th St.
Lincoln, Nebraska 68508

8.6 Estimated fees shall be submitted in a sealed, separate envelope.

9. PROJECT COORDINATION

9.1 The City Project Manager for the project will be:

Mr. Tom Malmstrom, AICP
Lincoln Parks & Recreation
Saline Wetland Project Coordinator
3125 Portia Street
P.O. Box 83581
Lincoln, Nebraska 68501-3581
402-476-2729

10. PROCUREMENT PROCEDURES

10..1 The RFP is designed to elicit proposals from qualified consultants who will be responsible for performing all identified tasks.

10.2 Proposals that do not conform to the mandatory requirements provided in the RFP will not be considered.

10.2.1 All proposals should conform to all instructions, conditions, and requirements included in this RFP.

10.3 Prospective consultants are expected to carefully examine all documentation, schedules and requirements stipulated in this RFP, and respond to each requirement in an organized manner.

10.4 The provisions of this RFP and the awarded proposal shall be incorporated by reference in the contract.

10.4.1 Any additional clauses or provisions required by the terms and conditions will be included as an amendment to the contract.

11. EVALUATION CRITERIA and SELECTION PROCESS

11.1 The City will conduct a fair, impartial and comprehensive evaluation of all proposals in accordance with the criteria set below.

11.2 Emphasis should be concentrated on conformance to the RFP instructions, responsiveness to requirements, and completeness and clarity of the proposal.

11.3 If the consultant's proposal is presented in such a fashion that makes evaluation difficult or overly time consuming, it is likely that will be considered in the evaluation process.

11.4 The criteria for determining the responsiveness level of each proposal include, but are not limited to:

11.4.1 The ability, capacity and skill of the consultant to deliver and produce the necessary elements that meet the requirement of this RFP.

11.4.2 The ability, capacity and skill of the consultant to understand the process and develop a cohesive project team.

11.4.3 The demonstrated experience, professional integrity, efficiency, character, and judgment of the consultant.

11.4.4 The quality of consultant's performance (management and technical) on previous and existing contracts, including the ability to establish and meet project schedules, document and address project delays, and maintain budgetary concerns.

11.4.5 The quality of consultant's performance (management and technical) specifically on wetland restoration design work.

11.4.6 Any and all other information that may be secured and that has a bearing on the decision to award contract.

11.5 Selection will likely be based on technical proposals with no short-list or oral interviews.

11.5.1 Should the selection committee determine oral interviews necessary; a short-list of no more than three (3) firms will be compiled.

12. PROPOSED SCHEDULE OF EVENTS

Activity	Date/Timeline
Release RFP	February 2005
Proposal Due Date	March 2005
Evaluation Meeting (Tentative)	March 2005
Oral Presentations (If Necessary)	March 2005
Consultant Contract Award/Notice to Proceed	April 2005
Completion of Final Design	September 2005
Award Construction Contract	October 2005

PROPOSAL
SPECIFICATION NO. *05-045*
BID OPENING TIME: 12:00 NOON
DATE: Wednesday, March 9, 2005

The undersigned, having full knowledge of the requirements of the City of Lincoln for the below listed phases and the contract documents (which include Notice, Instructions, this Proposal, Specifications, Contract, and any and all addenda) and all other conditions of the Proposal, agrees to enter into a contract with the City the below listed fees for the performance of this Specification, complete in every respect, in strict accordance with the contract documents at and for fees listed below.

ADDENDA RECEIPT: The receipt of addenda to the specification numbers _____ through _____ are hereby acknowledged. Failure of any submitter to receive any addendum or interpretation of the specifications shall not relieve the submitter from any obligations specified in the request. All addenda shall become part of the final contract document.

FRANK SHOEMAKER MARSH WETLAND RESTORATION
BIDDING SCHEDULE

Lump Sum ***$***_____

AFFIRMATIVE ACTION PROGRAM: Successful bidder will be required to comply with the provisions of the City's Affirmative Action Policy (Contract Compliance, Sec. 1.16). The Equal Opportunity Officer will determine compliance or non-compliance with the City's policy upon a complete and substantial review of successful bidder's equal opportunity policies, procedures and practices.

The undersigned signatory for the bidder represents and warrants that he has full and complete authority to submit this proposal to the City, and to enter into a contract if this proposal is accepted.

RETURN 5 COMPLETE COPIES OF PROPOSAL AND SUPPORTING MATERIAL.
MARK OUTSIDE OF BID ENVELOPE: SEALED BID FOR SPEC. *05-045*

_____ **COMPANY NAME**	_____ **BY (Signature)**
_____ **STREET ADDRESS or P.O. BOX**	_____ **(Print Name)**
_____ **CITY, STATE ZIP CODE**	_____ **(Title)**
_____ **TELEPHONE No. FAX No.**	_____ **(Date)**
_____ **EMPLOYER'S FEDERAL I.D. NO. OR SOCIAL SECURITY NUMBER**	_____ **ESTIMATED DELIVERY DAYS**
_____ **E-MAIL ADDRESS**	_____ **TERMS OF PAYMENT**

Bids may be inspected in the Purchasing Division offices during normal business hours, **after** tabulation by the purchasing agent. If you desire a copy of the bid tabulation to be mailed to you, you must enclose a self-addressed stamped envelope with your bidding documents. Bid tabulations can also be viewed on our website at: lincoln.ne.gov Keyword: Bid

The Flatwater Group, Inc.

TFG

MEMORANDUM

To: Tom Malmstrom, City of Lincoln - Saline Wetland Project Coordinator

From: Andrew Appleget, The Flatwater Group, Inc.

Copy: Terry Genrich, City of Lincoln - Parks and Recreation
Matt Mittelstadt, City of Lincoln - Northwest District Supervisor
Dan Schulz, Lower Platte South - Natural Resources Coordinator
Chuck Lesiak, NGPC - Wildlife Biologist
Randy Stutheit, NGPC - Wildlife Biologist
Brent Lathrop, Nature Conservancy

Date: 21 December 2004

Re: **Conceptual Design Memorandum for Shoemaker Marsh Wetland Restoration Design**

PROJECT BACKGROUND

The City of Lincoln's Frank Shoemaker Marsh is a diverse 160-acre habitat in north Lincoln containing saline wetlands, woodland, and grassland areas. The Saline Wetlands Conservation Partnership (Partnership) was formed in 2003 as a result of a 2002 grant received by the City of Lincoln from the Nebraska Environmental Trust (NET). The grant provided $750,000 over three years for the acquisition of property to **preserve and protect the eastern saline wetlands**. The Frank Shoemaker Marsh was purchased for $472,000 with $250,000 from NET grant funds and $222,000 from the 2001 State Wildlife Funds from the Nebraska Game and Parks Commission. Full partners of the Saline Wetlands Conservation Partnership include the City of Lincoln, Lancaster County, the Lower Platte South Natural Resources District, The Nature Conservancy and the Nebraska Game and Parks Commission. Other partners include private landowners, USDA-Natural Resources Conservation Service, Ducks Unlimited, the Wachiska Audubon Society, the Nebraska Sierra Club, the Home Builders Association of Lincoln, Pheasants Forever, the Conservation Alliance of the Great Plains and the Nebraska Wildlife Federation.

The primary goals of this restoration project are to enhance and restore degraded wetland systems, prevent further stream degradation within the project boundaries while maintaining known habitats (specifically those of the Salt Creek Tiger Beetle), and complement the restored wetland systems with native upland plant species.

In the spring 2004 the Partnership initiated discussions with The Flatwater Group, Inc (TFG) in order to develop a scope-of-work for preliminary conceptual engineering services. TFG prepared a detailed scope-of-work and entered into contract with the City of Lincoln in May 2004. The scope-of-work identifies the conceptual design memorandum (and associated plan) as the final delivery order under this contract.

PURPOSE

The purpose of this design memorandum it to present the proposed conceptual design plan for wetland and upland habitat restoration and improvement measures at Frank Shoemaker Marsh. In general, these measures include wetland cell development, low-head earth berm construction; shallow excavations and sediment removal; in-stream grade control structures; stabilization of critical stream bank sections; construction and/or installation of water level control devices; vegetation management techniques; primitive trail development; providing pedestrian and small vehicle access (including bridge); as well as other upland/grassland improvements.

In order to optimize the conceptual design and develop a list of feasible restoration and improvement measures, The Flatwater Group, Inc. (TFG) completed a detailed topographic survey of the entire project area. Acquisition of this site specific topographic information including stream profiles and cross sections at the conceptual phase allowed TFG to focus on concepts that will be effective in meeting the project goals as well as being feasible to construct. This information is an important baseline and helps to shape the physical constraints of site restoration. The topographic data was used to develop a detailed half-foot contour map of the site.

This design memorandum will serve as the springboard for the partners of the Saline Wetlands Conservation Partnership to move forward into the design phase for this important natural resource in our community.

DESIGN CONCEPTS

The overall conceptual design approach required careful consideration of the sensitive nature of the area. By limiting the amount of intrusive components traditionally incorporated into heavy construction projects, a "less-is-more" design concept has been employed by concentrating structures on fringe areas away from sensitive species and by naturalizing structures to the extent possible. This design philosophy minimizes impacts to the area during construction and allows a faster assimilation of the improvements into the ecosystem once they are complete.

The conceptual design for the Frank Shoemaker Marsh Wetland Restoration Design Project incorporates specific design elements to restore and enhance the area. These specific elements have been broken down into three primary categories: 1) Wetland Improvements; 2) In-Stream Improvements; and 3) Pedestrian, Upland, and Other Improvements. Each of these categories is a distinct component of the overall project. Breaking the project into distinct categories allows the project to phased, if necessary, any time from project design development through physical construction depending on available time and financial resources. These categories can also be used during development of contract documents such as scopes of work and construction bid tab items. Depending on potential funding mechanisms, these categories can also be used to target specific funding mechanisms.

Specific activities that fall under each of the design element categories include the following:

WETLAND IMPROVEMENT MEASURES

1. Wetland Cell Development. The existing topography and site layout (see attachment) of the Frank Shoemaker Marsh property lends itself to the development of three separate, but integrated, wetland cells. These cells are supported and somewhat separated by the primary channel of Little Salt Creek.

2. Low-Head Earth Embankments. The existing earth berms on the west side of the channel maintain a quality footprint for the establishment of a new berm system within each specific cell. A system of low-head berms or embankments will mimic the natural stream levee system that has been eroded by head-cuts. The constructed earth berms will utilize clean fill of non-dispersive materials with varying side slope design (both 3:1 and 10:1 slopes). This type of berm construction will also be utilized on the east side of the channel. All existing berms within the cell development will be removed and re-worked as part of this restoration measure. The berm system concept, in conjunction with water level control capabilities can allow for retention and/or direction of surface water.

3. Shallow Excavation/Sediment Removal. Shallow excavation of sediment and removal of any trees and stumps within the new wetland cells will reestablish micro-topography and undulating bottom elevations within each cell. Side slopes will be shaped and stabilized as part of this design measure.

4. Water Level Control Structure(s). This will include the installation of multiple prefabricated water level control structures within each wetland cell to manage surface water and give flexibility to

management techniques. The structures typically contain drop-boards ranging from four to eight inches in height that allow for varying water levels and flexibility in water level management.

5. Vegetation Management. As part of the wetland cell development, undesirable vegetation (including selected trees) will be removed during berm construction and excavation/sediment removal. Once the unwanted vegetation is removed, future management techniques such as prescribed burns and rotation grazing will be employed to minimize reestablishment.

IN-STREAM IMPROVEMENT MEASURES

1. Grade Control Structure(s). Control of the existing stream grade within the boundaries of Shoemaker Marsh is imperative to the prevention of further down-cutting of the stream bed and degradation of the stream banks. The existing rock rubble crossing currently provides the only local grade control structure on the site. The condition of this structure is poor. At a minimum, the structure will require rehabilitation and addition of supplemental armoring to maintain a properly functioning grade control and/or crossing. Additional grade control structures shall be considered at the upstream and downstream limits of the property boundary to maintain control of the gradient onsite.

2. Stream bank Reshaping. Bank reshaping and restoration should be considered at selected areas as part of the in-stream improvement measures. Measures may include selected slope modification, benching, re-vegetation, etc. Any reshaping activities should also minimize impacts to existing Salt Creek tiger beetle habitat (along the stream banks), and if possible, attempt to enhance or increase the extents of those areas.

PEDESTRIAN, UPLAND AND OTHER IMPROVEMENT MEASURES

1. Pedestrian/Small Vehicle Bridge. A pedestrian bridge will be located upstream of the existing crossing location. This will include the addition of new bridge abutments and a new pre-fabricated pedestrian bridge that will span the existing stream width. This type of crossing will be important to pedestrian flow and future site management.

2. Primitive Trails. A primitive trail system should be considered as a connection with the existing parking lot and access road. This could include a wood-chip or other low maintenance surfaced trail to establish a logical pedestrian flow pattern within the site.

3. Overlook Pier(s). Overlook piers could be included as part of the trail system at selected vista locations.

4. Vegetation Management. Undesirable vegetation (including selected trees) will be removed during the construction process in the upland areas as well as the wetland areas. Native upland grass mixes should be considered in those areas, specifically where removal of encroaching trees is employed.

DESIGN INPUTS

TFG evaluated a number of site conditions in consideration of the conceptual design measures identified above, including local topography, hydrology and hydraulics, general geology and geotechnical aspects of the site, existing and potential habitat, and existing plant communities. These site conditions are paramount in understanding the site and planning for restorative measures.

HYDROLOGY & HYDRAULICS BACKGROUND

The City of Lincoln and the LPSNRD are in the process of developing basin-wide hydrology and hydraulics to support comprehensive planning for stormwater management within the Little Salt Creek watershed. An interim report was issued in February of 2004 (Olsson Associates, February 2004). The report effort has been suspended and remains in draft form as a result of the Salt Creek Tiger

Beetle ongoing evaluations. However, the hydrology and hydraulics developed are useful for evaluating current and project runoff from the watershed. The model data was obtained from reviewed for this purpose.

Degradation of the wetlands is the result of increased drainage caused by channel bed degradation of Salt Creek and its tributaries. The channel bed degradation is the result of extensive channelization. In the 1930's, Salt Creek's channel was straightened and a uniform channel was constructed. Many of the Salt Creek tributaries responding by eroding the stable stream bed and creating incised channels. The incised channels intercepted shallow groundwater in addition to forming head-cuts in the banks the main channel. The loss of shallow groundwater and head-cuts drained many of the wetland areas or significantly altered the natural hydrology of the system.

Based on our field observations and the evaluation of stream segments within the OA study, it our opinion that the channel and banks continue to erode and degrade. However, the northern property boundary appears to be at or near the terminus of this active degradation. Unchecked, we can expect further degradation and an expansion of head-cuts associated with the stream degradation While the concrete rubble check dam has had the effect of limiting the expansion of the degradation upstream, it is steadily being eroded and as the poorly placed materials continue to move. This is evidenced by staining of the surface of the concrete that clearly shows that the structure is failing.

Current land use, stream characteristics, and precipitation data were used to develop runoff parameters and subsequent estimates of storm runoff for various return intervals. Using channel and valley physical characteristics, a hydraulic model was developed to estimate water surface elevations, stream velocities, and flood flow widths for each return period. Currently, no land use modifications are projected for the watershed area above the Shoemaker Marsh site. Therefore, only existing conditions for those areas were evaluated in the study.

Results of the study were used by TFG to evaluate existing conditions at the Shoemaker site and to assist in the development of restoration and mitigation measures. The 2-year storm is contained within the existing channel of the property. In general, the 10-year storm is also contained within the channel. However, this event appears to be at or near the channel capacity. An important design consideration will be that of the "bankfull" discharge of the stream. Bankfull stage is generally associated with the flow that just fills the channel to the top of the banks – where water begins to overflow to adjacent floodplain. For a watershed with the characteristics of LSC, this will generally be an event that corresponds to a 2- to 5-year storm event. This is an important consideration because this is the event that generally corresponds to the maximum sediment load of the stream and has enough energy to effect shape and slope of the channel.

Primary use of the hydrologic and hydraulic models will be in the Final Design. The design should include an analysis of the effects of any channel or floodplain modification in order to determine if regulatory requirements can be met. The bankfull discharge should also be analyzed to determine elevations of in-stream restoration and mitigation measure.

The analysis of the H&H provides general design objectives and constraints for channel restoration and stabilization. First, restoration of the channel is likely not feasible because of the extensive degradation that has occurred. In addition, many of the Salt Creek Tiger beetle sightings reported to TFG have occurred at stream elevations that would become filled or inundated if restoration were to occur. The primary goal of in-stream work should be stabilization of the existing system. Likely elements would include check structures and potentially bank stabilization. Focus should be on the downstream (southern) edge of the property and in the restoration or replacement of the existing concrete rubble check dam.

GEOLOGY & GEOTECHNICAL BACKGROUND

1. General Geologic Assessment. Saline soil, while supporting an exotic ecosystem, brings the geotechnical problems of susceptibility to internal erosion and heightened susceptibility to

external erosion. External erosion is caused by water flowing rapidly over an exposed soil surface, whether the surface is bare or vegetated. External erosion occurs with all soils to varying degrees, depending on susceptibility of the soil. Internal erosion is the formation of caverns and pipe-like channels within a soil mass and almost exclusively occurs where dispersive soils exist. Soil dispersion is characterized as the dissociation of clay particles under the action of slowly-moving water in cracks or small holes or, at the extreme limit, spontaneous dissociation in the presence of water. Soil dispersion is related to the sodium concentration in the pore water and a predominance of exchangeable sodium ions on the surfaces of clay particles. Saline wetlands are expected to have dispersive clays. Dispersive clays are expected to occur over most, if not all, of Shoemaker Marsh. Evidence of internal and external dispersive erosion was found along the creek banks, on the level ground back from the creek, and on and near the low embankments on the site. On the creek banks and on the sides of gullies leading to the creek, un-vegetated slopes display the characteristic "popcorn" surface of dispersive clays exposed to rainfall. Dispersive "jugs" or sinkholes have formed on the level ground leading away from the creek.

2. Geotechnical Considerations. Treatment of dispersive clays will be necessary for low embankments to hold water and for the level areas near the creek and gullies to act as wetlands. Selected gullies and washouts will need to be plugged or otherwise stabilized and the creek channel gradient will need to be stabilized to prevent even higher gradients than currently exist. Embankments to plug gullies will need treatment. Importation of non-dispersive soils for placement as cover for dispersive soils is not as drastic as chemical modification, but still will encourage a change in the type and quality of vegetation. In addition, the imported soil will be susceptible to eventual modification to the dispersive condition by the saline groundwater that caused the salt marsh in the first place. A geotechnical investigation will need to address the potential solutions to dispersive conditions and the ramifications of any potential treatments with respect to the permanence of the marsh. The various features of the marsh will have to be addressed separately, because each is affected differently by the presence of dispersive clays. In the floor of the marsh, dispersive clays are desirable, because they have lower permeabilities than non-dispersive clays (e.g., bentonite is sodium montmorillonite). Embankments for surface water control or for gully or creek grade stabilization will be susceptible to all of the types of dispersive erosion. Only surface water control embankments will be in contact with marsh areas.

3. General Recommendations for Geotechnical Investigation. The vertical and horizontal variability and level of dispersiveness should be evaluated through borings, samples, and laboratory tests. Testing should also include screening tests on potential off-site borrow and tests on trial mixes of possible chemical treatments. Potential tests include crumb dispersion tests, pinhole dispersion tests, grain-size analyses, Atterberg limits, sodium absorption test, pH, conductivity, Proctor moisture-density relations, and chemical tests for total exchange capacity, Na^{+}, and Ca^{++}. Proposed boring locations are depicted on the enclosed map. It is anticipated that the core team would also include semi-permanent monitoring wells at these boring locations.

HABITAT

Frank Shoemaker Marsh provides a rare and vanishing plant and animal habitat in Lincoln, Lancaster County, Nebraska. Saline wetlands -- unique ecosystems characterized by salt-tolerant plants growing in salty soils and surface waters -- also called salt marshes, are home to many plant and animal species that are specially adapted to thrive in that kind of ecosystem. Plants such as saltwort and sea blite grow in saline wetlands. The rare Salt Creek tiger beetle makes its home only in the saline environments of the Salt Creek watershed; including the saline creek banks of Little Salt Creek, located on Frank Shoemaker Marsh. This site has also historically provided abundant habitat for waterfowl, upland birds, deer, rabbit, etc.

Because the Salt Creek tiger beetle has been sited and documented on Shoemaker Marsh (banks of Little Salt Creek), it is essential that any design efforts incorporating the stream and associated banks maintain habitat properties suitable and known to the Salt Creek tiger beetle. The Salt Creek tiger

beetle habitat on Frank Shoemaker Marsh can be generally described as those areas or zones of the creek bank that are void of vegetation, remain moist but are not continuously inundated, and are in close proximity to the exposed flats within the stream bottom.

While tiger beetles have not been documented on the upland salt flats at Shoemaker Marsh, they are known to burrow in salt flats at other locations. Because the proposed wetland restoration measures at Shoemaker Marsh include salt flats, it is important to understand known tiger beetle habitat properties such as soil moisture and soil salinity.

University of Nebraska Entomologists Bill Allgeier and Steve Spomer have provided the following information regarding preferred soil moisture and soil salinity of two tiger beetles studied at Arbor Lake WMA. Salt Creek tiger beetle, Cicindela nevadica lincolniana, burrows occur on the saline creek banks. Cicindela circumpicta burrows occur both on the upland salt flats and the saline creek banks.

Cicindela nevadica lincolniana preferred a mean soil electrocondictivity of 2,504.1 mS/m with a lower confidence interval of 2,016.0 mS/m and an upper confidence interval of 2,992.1 mS/m.

Cicindela circumpicta johnsoni preferred a mean soil electro conductivity of 7,873.9 mS/m with a lower confidence limit of 4,172.4 mS/m and an upper confidence limit of 11,575.0 mS/m.

Cicindela nevadica lincolniana preferred mean soil moistures of 47.6% with a lower confidence limit of 43.5% and an upper confidence limit of 51.7%.

Cicindela circumpicta johnsoni preferred mean soil moistures of 35.3% with a lower confidence limit of 24.4% soil moisture and an upper confidence limit of 46.3%.

WETLAND PLANT COMMUNITY BACKGROUND

The existing wetland plant community at Shoemaker Marsh, as defined by U.S. Fish & Wildlife Service, includes four (4) general types of wetlands:

PEMF: [P] Palustrine, [EM] Emergent, [F] Semipermanently Flooded

[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1) are less than 8 hectares (20 acres); 2) do not have an active wave-formed or bedrock shoreline feature; 3) have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; and 4) have a salinity due to ocean-derived salts of less than 0.5 ppt.

All water bodies visible on the aerial photography that are less than 8 hectares (20 acres) in size are considered to be in the Palustrine System unless depth information is available, or unless an active wave-formed or bedrock shoreline feature is visible.

Limits: The Palustrine System is bounded by upland or by any of the other four systems.

The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent or intermittent water bodies often called pond. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers.

Class: Class describes the general appearance of the habitat in terms of either the dominant fife form of the vegetation or the physiography and composition of the substrate. Life forms (e.g. trees,

shrubs, emergents) are used to define classes because they are easily recognizable, do not change distribution rapidly, and have traditionally been used to classify wetlands. Other forms of vegetation such as submerged or floating-leaved vascular plants are more difficult to detect. Substrates reflect regional and local variations in geology and the influence of wind, waves, and currents on erosion and deposition of substrate materials.

[EM] Emergent - Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtidal and irregularly exposed.

Water Regime: Freshwater Non-Tidal areas (L, P, and R systems). Though not influenced by oceanic tides, nontidal water regimes may be affected by wind or seiches in lakes. Water regimes are defined in terms of the growing season, which we equate to the frost free period. The rest of the year is defined as the dormant season, a time when even extended periods of flooding may have little influence on the development of plant communities.

[F] Semipermanently Flooded - Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.

PABG: [P] Palustrine, [AB] Aquatic Bed, [G] Intermittently Exposed

[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1) are less than 8 hectares (20 acres); 2) do not have an active wave-formed or bedrock shoreline feature; 3) have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; and 4) have a salinity due to ocean-derived salts of less than 0.5 ppt.

[AB] Aquatic Bed - Includes wetlands and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Aquatic beds generally occur in water less than 2 meters (6.6 feet) deep and are placed in the Littoral Subsystem (if in Lacustrine System). Water regimes include the following: subtidal, permanent-tidal, semipermanent-tidal, irregularly exposed, regularly flooded, permanently flooded, intermittently flooded, semipermanently flooded and seasonally flooded.

[G] Intermittently Exposed - Surface water is present throughout the year except in years of extreme drought.

PUBF: [P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded

[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1) are less than 8 hectares (20 acres); 2) do not have an active wave-formed or bedrock shoreline feature; 3) have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; and 4) have a salinity due to ocean-derived salts of less than 0.5 ppt.

[UB] Unconsolidated Bottom - Includes all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%. Water regimes are restricted to the following: subtidal, permanent-tidal, semipermanent-tidal, permanently flooded, intermittently flooded, and semipermanently flooded.

[F] Semipermanently Flooded - Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.

PEMC: [P] Palustrine, [EM] Emergent, [C] Seasonally Flooded

[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1) are less than 8 hectares (20 acres); 2) do not have an active wave-formed or bedrock shoreline feature; 3) have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; and 4) have a salinity due to ocean-derived salts of less than 0.5 ppt.

[EM] Emergent - Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtidal and irregularly exposed.

[C] Seasonally Flooded - Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

ENGINEERING AND CONSTRUCTION

Engineering services includes: 1) final design (final grant administration and NEPA compliance assistance, and final design and drawing development); and 2) construction phase (bidding services and construction related services).

A key to any restoration project is securing the services of a competent contractor that can take the design and turn it into a successful project. Paramount to this task is development of a concise, clear, set of contract documents that result in a "biddable" project. Well developed contract documents generally lead to greater contract interest and more competitive prices. Once the contract is awarded, the Engineer and contractor will work together to ensure an efficient construction schedule and ultimately a successful final product are completed at Frank Shoemaker Marsh.

PROJECT SUMMARY

As indicated in the project background section of this memorandum, TFG prepared and followed a detailed scope-of-work under this contract. In general the scope-of-work included four primary service areas; 1) project initiation, 2) data collection and field investigation, 3) conceptual design, and 4) preliminary agency coordination. Associated with each of these service areas were both core and technical team meetings and coordination. The preparation of this conceptual design memorandum is a compilation of those tasks comprising the four service areas.

A major effort under this contract was the data collection/field investigation and subsequent development of a topographic map for the Frank Shoemaker Marsh site (see attachment). The site topography is essential for final design development and construction services and also serves as one of the design inputs analyzed at the conceptual level. Temporary benchmarks are maintained throughout the site in strategic locations to aid in final design and construction.

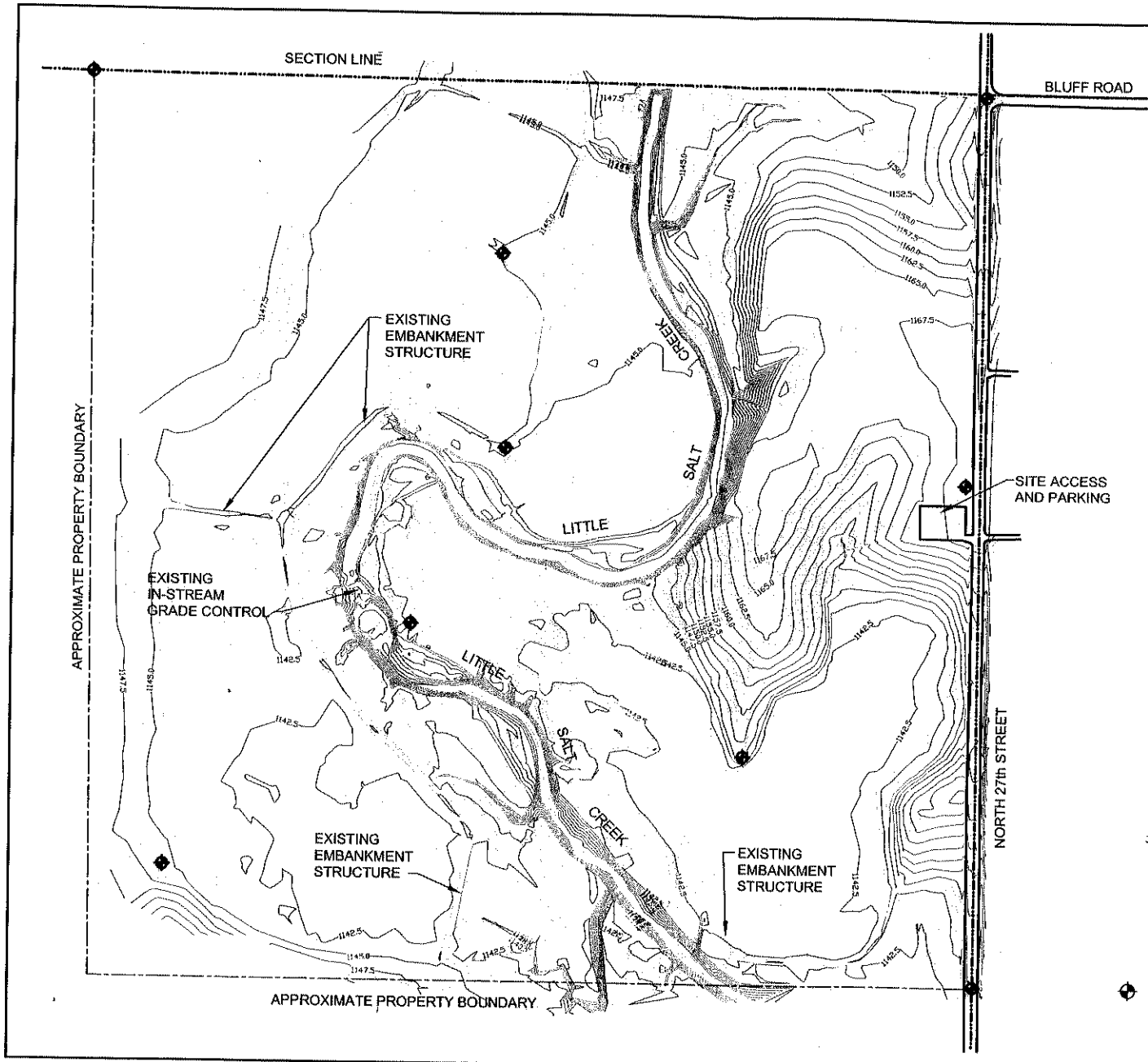
The design concepts identified and addressed above are schematically depicted on the concept plan for Frank Shoemaker Marsh (see attachment). The design concepts are identified with consideration to the various design inputs and overall site conditions present at Frank Shoemaker Marsh.

In order to plan for future project development and potentially prioritize restoration measures, TFG has prepared a preliminary cost estimate (see attachment) comprehensive of the design concepts identified above and depicted on the schematic plan.

While the Frank Shoemaker Marsh project is the enhancement and restoration of an existing wetland, it will still be necessary to prepare and submit a Department of the Army Section 404 permit application upon completion of final design. As a courtesy, TFG notified the U.S. Army Corps of Engineers of future project at Frank Shoemaker Marsh (see attachment). Similarly, TFG also provided preliminary project notification (written or verbal) to the following reviewing agencies: Nebraska Department of Environmental Quality, Lancaster County Building and Safety Department - Floodplain Management, and Nebraska State Historical Society. Permitting and/or approval from each of these agencies will be necessary upon completion of the final design for Frank Shoemaker Marsh Restoration project.

With the completion of these conceptual engineering services, there is ample information for the Partnership to structure and develop a final design scope-of-work that will best fit the goals and objectives of the Frank Shoemaker Marsh Restoration project.

ATTACHMENT 1
EXISTING CONTOUR MAP



300' 0 300'

SCALE

0.5' CONTOUR INTERVAL

TEMPORARY BENCHMARK LOCATION AND SECTION CORNERS

THE SALINE WETLANDS CONSERVATION PARTNERSHIP

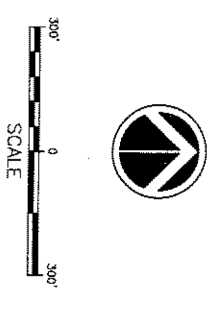
FRANK SHOEMAKER MARSH
WETLAND RESTORATION PROJECT
CONCEPTUAL DESIGN
LINCOLN, LANCASTER COUNTY, NEBRASKA

EXISTING CONTOUR MAP

The Flatwater Group, Inc.
1616 L Street
Lincoln, Nebraska 68508
(402) 435-8441
(402) 435-7108

DATE	21 DECEMBER 2004
DESIGNED BY	AJA
DRAWN BY	SMB
CHECKED BY	TER
PROJECT NUMBER	LINC-2004-01
SCALE	AS SHOWN
FILE NAME	-
PLAN SET NUMBER	
SHEET NUMBER	1

ATTACHMENT 2
PROPOSED CONCEPT MAP



0.5' CONTOUR INTERVAL

● PROPOSED SOIL BORING/ MONITORING WELL LOCATIONS

FRANK SHOEMAKER MARSH
WETLAND RESTORATION PROJECT
CONCEPTUAL DESIGN
LINCOLN, LANCASTER COUNTY, NEBRASKA

CONCEPTUAL DESIGN

TFG
The Flatwater Group, Inc

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SCALE	AS SHOWN
FILE NAME	-
PLAN SET NUMBER	
SHEET NUMBER	2

saline wetlands conservation partnership

THE SALINE WETLANDS CONSERVATION PARTNERSHIP

ATTACHMENT 3
PRELIMINARY COST ESTIMATE

FRANK SHOEMAKER MARSH WETLAND RESTORATION
CONCEPTUAL PHASE PRELIMINARY COST ESTIMATE TABLE

1. **Excavation and Disposal** – sediment and soil removal and spoiling of materials on-site to enhance wetland cells, habitat, etc. Creating undulated and diverse bottoms with varying depths at different cells. Materials likely spoiled in the northeast corner of the property.	**$425,000**
2. **Berm Construction** – constructing earth core berms for wetland cell restoration and enhancement. Materials likely to be borrowed from northeast corner of the property.	**$200,000**
3. **Grade Control Structures** – in-stream grade control structures including hard armoring, gabions, etc.	**$100,000**
4. **Main Crossing** – improvements to the existing crossing/grade control structure including additional rock riprap, re-grading, rock riprap stilling basin, etc.	**$50,000**
5. **General Clearing and Grubbing** – includes clearing and grubbing of existing vegetation to perform all excavation, berm construction, etc. to complete the restoration.	**$35,000**
6. **Tree Removal** – Removing trees necessary to complete the restoration.	**$50,000**
7. **Pedestrian access improvements** – includes limited primitive trails (wood chip topped or possibly crushed rock surfacing) to primary restoration areas.	**$25,000**
8. **Pedestrian Bridge** – installation of prefabricated structure designed for pedestrian and small truck loading. Includes associated site work, abutments, etc.	**$165,000**
9. **Habitat Restoration** – includes grading improvements to banks, head-cuts, uplands, etc.	**$25,000**
10. **Water Level Control Structure(s)** – includes installation of pre-fabricated, low-maintenance water level control structures. Structures will allow management of water levels within individual wetland cells.	**$15,000**
11. **Seeding and Planting** – Includes seeding all berm construction, spoil locations, etc. Plantings may include planting freshwater species in west property boundary buffer areas.	**$168,000**
12. **Fencing** – Barbed wire fence for potential grazing management, area separation, etc.	**$20,000**
13. **Creek Stabilization Measures** – selected bank grading, composite revetment construction, etc.	**$100,000**
14. **Water Supply / Management** – potential installation of wells, windmills, pumps, etc.	**$5,000**
15. **Head-cut Plugs/Soil Amendment** – plugging selected localized head-cuts and amending the soils as necessary to protect wetland cells.	**$25,000**
16. **Vistas, Guard Posts,** Piers – installation of guard posts and possible look-out pier(s).	**$25,000**
17. **Geotechnical Investigation/Analysis** – Professional geotechnical investigation and analysis of existing soils. Includes selecting locations for on-site soil borings and laboratory analysis.	**$15,000**
18. **Groundwater Investigation/Analysis** – Installing temporary monitoring wells for groundwater analysis.	**$10,000**
19. **Final Engineering Design** – Professional Engineering Services for final design of restoration measures.	**$100,000**
20. **SUBTOTAL**	**$1,558,000**